



How Effective is the Shorts Transformation of Traditional Media? An Analysis from the Perspective of User-Generated Content

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Abstract. The digital transformation of traditional media outlets has become a critical imperative in the evolving media landscape. As traditional media grapple with the challenges of adapting to the rise of digital and social media platforms, understanding the factors that shape their performance and user engagement on these emerging channels is of paramount importance. This study examines the comparative performance of a traditional media account with a government background (Hubei Daily) and a specialized new media account (Cover News) on Douyin platform, with a focus on the distribution of emotional sentiment and thematic diversity in user-generated content. We collected 19,343 comments from “Hubei Daily,” with 18,792 valid (97.15%), and 36,737 comments from “Cover News,” with 28,910 valid (78.69%). Our research used a BERT fine-tuned model for sentiment analysis, TF-IDF for keyword extraction, keyword co-occurrence analysis, and a large language model for topic modeling. This approach allowed us to capture a wide range of discussion topics and understand the thematic focus. Findings show that the new media account covered broader topics, whereas the traditional media account had a more concentrated thematic focus. Typically, such events should generate negative emotions and discussions around accountability. However, the study indicates that users are more cautious in their comments on official media, suggesting ineffective digital transformation by traditional media. This underscores the need for traditional media to better understand and adapt to content preferences and engagement patterns of shorts platform users, highlighting the complexities of transitioning to emerging platforms and the importance of effective content strategies and meaningful user engagement.

Keywords: Online Public Opinion · Media Transformation · Social Media Analytics

1 Introduction

The rapid growth of shorts platforms, such as TikTok and Instagram Reels, has presented both opportunities and challenges for traditional print media outlets seeking to transform and adapt to the digital age. Many established media organizations have launched operations on these platforms to attract a wider, often younger, audience [1, 2]. However, the effectiveness of this transformation remains a subject of ongoing debate.

On one side of the debate, scholars argue that traditional media's transition to shorts platforms is a necessary and promising strategy. They contend that by leveraging the unique features and user behaviors of these platforms, traditional media can expand their reach, enhance audience engagement, and ultimately secure their long-term viability in the digital landscape [3]. The ability to create compelling, platform-tailored content and foster meaningful user interactions is seen as crucial for traditional media's successful transformation.

On the other hand, critics argue that the transition to shorts platforms may not be a panacea for traditional media's woes. They suggest that the distinct content preferences and engagement patterns of these platforms pose significant challenges for traditional media, which are often accustomed to longer-form, text-based reporting [4, 5]. The ability to effectively manage and leverage user-generated content, such as comments and shares, is also cited as a key determinant of success in this new media environment [6].

Ultimately, the question of whether traditional media's transformation efforts on shorts platforms have been successful remains unresolved. Addressing this gap is crucial, as the outcome of this transition can have far-reaching implications for the future of traditional media and the broader media ecosystem. By conducting a comparative analysis of user-generated content on traditional media and new media accounts, this study aims to assess the effectiveness of traditional media in the process of digital transformation.

This study specifically examines the differences in the sentiment and thematic content of over 48,000 user comments on short video posts about the same event, published by two distinct media accounts "Cover News" and "Hubei Daily" on the Douyin platform. By conducting a comparative analysis of user comments on matched content from traditional print media and new media accounts, this study aims to evaluate the effectiveness of traditional media's transformation efforts on shorts platforms.

2 Related Work

2.1 Media Transformation

The digital age has presented traditional media outlets with the imperative to transform and adapt. Küng explored the transformation strategies of traditional media in the digital era, emphasizing the need to reshape organizational culture and business models [7]. The author argued that successful transformation requires traditional media to fundamentally rethink their value propositions, organizational structures, and operational processes to align with the demands of the digital landscape.

Similarly, Goyanes and Dürrenberg investigated the transformation practices of Spanish newspapers on digital platforms [8]. The study examined the factors that influenced the newspapers' efforts to establish an online presence, including organizational resources, technological capabilities, and market conditions. The findings suggested that the effectiveness of traditional media's digital transformation was contingent on their ability to develop appropriate content strategies and business models for the new media environment.

Collectively, these studies underscore the significant challenges and complexities involved in the digital transformation of traditional media. Successful transformation requires traditional media to not only develop new technical and operational capabilities but also fundamentally rethink their organizational structures, value propositions, and business models to align with the demands of the digital age.

2.2 User-Generated Content on Social Media Platforms

User-generated content (UGC) has become an integral part of social media platforms, with significant implications for media organizations. Kaplan and Haenlein proposed a classification of UGC and its applications on social media, highlighting the diverse forms of user-created content, such as blogs, wikis, and social networking posts [9]. The authors emphasized the importance of understanding the characteristics and motivations of UGC for media organizations seeking to leverage these platforms effectively.

Diakopoulos and Naaman explored the role of user comments in news reporting, examining their impact on the quality and credibility of news coverage [10]. The study found that user comments can provide valuable feedback and insights, but they can also introduce biases and misinformation that can undermine the integrity of news reports. This underscores the need for traditional media to carefully manage and moderate user-generated content on their digital platforms.

Ziegele et al. further investigated the mechanisms by which user comments influence the dissemination of news reports [11]. The researchers found that the volume, sentiment, and interactivity of user comments can significantly affect the reach and engagement of news content on social media. This suggests that traditional media's ability to foster meaningful user engagement and manage the narrative around their content can be crucial for the success of their digital transformation efforts.

The research on UGC in the social media context highlights the importance for traditional media to understand and effectively leverage user-generated content on their digital platforms. Navigating the complexities of user engagement, content moderation, and narrative control can be critical factors in determining the success of traditional media's transition to the new media landscape.

2.3 Shorts Social Media Platforms

The rise of shorts platforms has been a significant development in the media landscape, presenting both opportunities and challenges for traditional media outlets. Cheng et al. studied the user behavior characteristics and dissemination mechanisms of platforms such as Vine [12]. The researchers found that shorts content on these platforms tends to have high engagement rates and rapid diffusion, driven by factors like video length, content type, and user interactions.

Bakhshi et al. explored the content dissemination features of image-sharing platforms like Instagram, which have also become a popular medium for shorts content [13]. The study highlighted the role of visual cues, emotional appeal, and social context in driving the virality of content on these platforms. These findings suggest that the success of traditional media's transformation efforts on shorts platforms may depend on their ability

to create content that resonates with the unique characteristics and user behaviors of these platforms.

Hu et al. conducted a comparative analysis of user behavior across various social media platforms, including shorts platforms [14]. The researchers found significant differences in the types of content, user engagement, and social interactions on these platforms, underscoring the need for traditional media to tailor their strategies and content to the specific dynamics of each platform.

The research on shorts social media platforms emphasizes the distinct user behaviors, content preferences, and dissemination mechanisms that characterize these emerging media environments. For traditional media seeking to transition to these platforms, understanding and adapting to these platform-specific dynamics can be crucial for achieving effective and sustainable transformation.

3 Methodology

To examine the effectiveness of traditional media's transformation efforts on shorts platforms, this study employs a multi-pronged methodological approach. First, a data collection process is implemented to gather user-generated content from matched content posted by traditional media and new media accounts on the Douyin (TikTok's Chinese version) platform. Next, sentiment analysis techniques are leveraged to evaluate the polarity of the collected user comments, with a focus on those expressing negative sentiment. Finally, topic modeling methods are utilized to uncover the dominant themes and discussions emerging from the negatively-valenced comments. By comparing the UGC patterns across the traditional and new media accounts, we were able to conduct a comprehensive analysis of the sentiment and thematic content within the user comments, enabling them to compare the differences between the two media accounts' portrayals of the Changsha building collapse event. The technical approach and logical framework of this study is shown in the Fig. 1 below.

3.1 Data Preparation

On May 12, 2022, a 17-story commercial building in Changsha, Hunan province, collapsed, resulting in significant loss of life and property. This incident sparked widespread public attention and discussion on social media platforms like Douyin. The comments on video posts about the collapse provide a unique opportunity to examine public reaction and media framing of the event.

We analyzed the most liked video content related to the incident. The most popular video was published by Cover News, receiving 755,000 likes and 375,000 forwards. Cover News, a new media account, has 32.449 million followers and 2.16 billion total likes. Hubei Daily, a traditional media account, received 218,000 likes and 44,000 forwards for its most popular video. It has 47.823 million followers and 2.78 billion total likes.

Using a Python crawler, we collected comments from the videos with IDs "7322022728809188649" (Hubei Daily) and "7321936745338096931" (Cover News). After data collection, we cleaned the data by converting and removing emojis and other

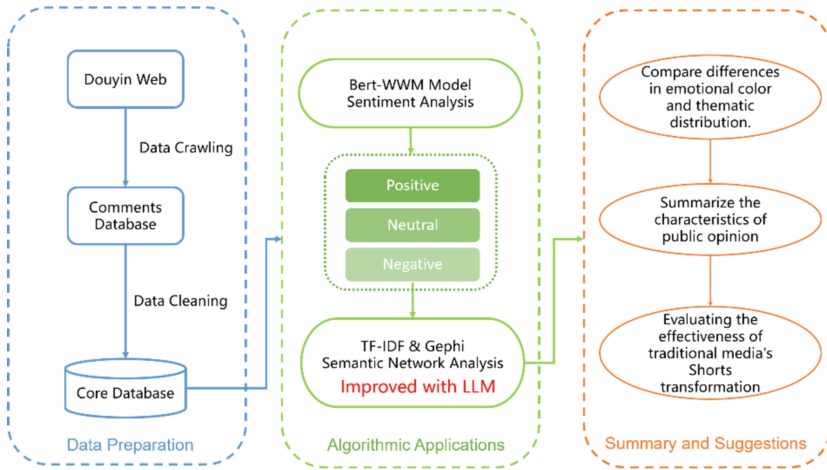


Fig. 1. Research Logical Framework Diagram

meaningless characters, eliminating irrelevant comments, handling missing data, and normalizing the text for further analysis.

3.2 Sentiment Analysis

To evaluate the distribution of emotional sentiment in the user comments, we used a pre-training BERT model [15]. The Chinese BERT-wwm is a state-of-the-art natural language processing model that has demonstrated strong performance in various text classification tasks, including sentiment analysis [16]. The model achieves 95% accuracy for the general task of sentiment analysis of short texts and can be used for this task [16]. The model then processed each comment and output a sentiment score from 0 to 1, indicating the likelihood of the comment being positive, negative, or neutral. Here we make 0.2 as a small interval, and the specific correspondence is shown in Table 1 below [17].

By applying the Bert-wwm model to the entire dataset of user comments, the researchers were able to obtain a detailed distribution of the emotional sentiment expressed across the comments. This sentiment analysis provided a quantitative measure of the overall sentiment tendencies within the comments, which was then used to inform the subsequent thematic analysis. The researchers paid particular attention to the comments that exhibited negative sentiment, as these were the focus of the thematic analysis and comparison between the two media accounts' portrayals of the Changsha building collapse event.

3.3 Thematic Analysis

After conducting sentiment analysis, researchers focused on comments with negative sentiment. To uncover key themes within these comments, they used a keyword co-occurrence semantic network technique based on the TF-IDF (Term Frequency-Inverse Document Frequency) algorithm [18].

Table 1. Corresponding Table of Emotional Intensity Relationships

| Typical corpus | Emotional intensity score | Emotional tendency |
|---|---------------------------|--------------------|
| It's tragic! | 0–0.2 | Strongly negative |
| That's unfortunate! | 0.2–0.4 | Negative |
| Hopefully, there will be no new casualties tomorrow | 0.4–0.6 | Neutral |
| Go for it! Peace and safety! | 0.6–0.8 | Positive |
| Trust in the government! It's going to be okay! | 0.8–1.0 | Strongly positive |

They constructed a co-occurrence network where high TF-IDF score keywords were represented as nodes, connected based on their co-occurrence within comments [19]. This helped identify key themes associated with negative sentiment [20].

To enhance the analysis, researchers used ChatGPT 4.0 to cluster and refine these themes. This AI system's semantic understanding and contextual reasoning abilities grouped the themes into coherent categories, providing a deeper understanding of the topics and concerns in the negative comments.

Combining TF-IDF-based keyword analysis with ChatGPT 4.0's clustering capabilities allowed researchers to uncover key themes linked to negative sentiment in user comments about the Changsha building collapse across the two media accounts.

4 Results

4.1 Distribution of Comments Data

The total number of comments collected from “Cover News” is 36,737, and the valid data after processing is 28,910, the data validity rate is 78.69%. We uniquely attribute the comments posted in an hour to this hour, and the result of this collation is shown in Fig. 2 below. We can clearly find that the topic hotness shows a periodic change, which is related to the time period when people use the software. Meanwhile, the time heat shows a gradual decline overall.

The total number of comments collected from “Hubei Daily” is 19,343, and the valid data after processing is 18,792, the data validity rate is 97.15%. After conducting the same organizing steps, the results obtained are shown in Fig. 3 below. We can clearly notice that the number of replies to the content posted by the media account peaks higher (on an hourly scale), but the heat declines more quickly.

4.2 Sentiment Analysis Results

Sentiment analysis for “Cover News”

The sentiment analysis algorithm was used to assign scores to the 28,910 comments

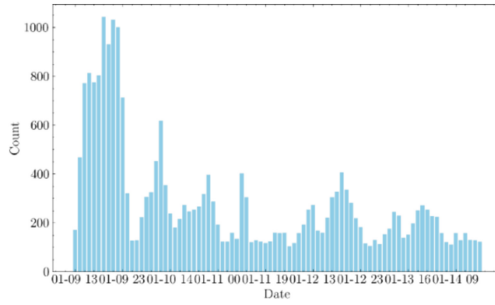


Fig. 2. Distribution of Comments Data from Cover News

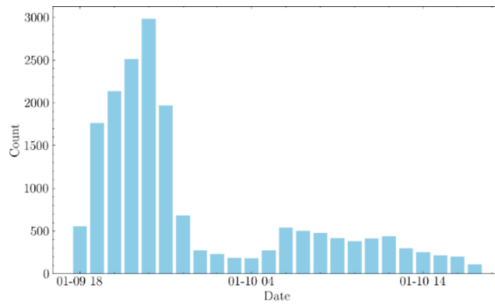


Fig. 3. Distribution of Comments Data from Hubei Daily

from “Cover News”, and the results are shown in Fig. 4 below. It can be found that the number of texts with negative emotional coloring significantly exceeds the number of texts with positive emotional coloring, and the distribution of the number of texts with each emotional score shows an overall trend of gradually decreasing from negative to positive.

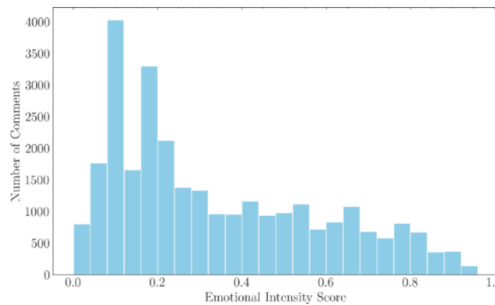


Fig. 4. Distribution of Sentiment Scores of Comments from Cover News

Sentiment analysis for “Hubei Daily”

The sentiment analysis algorithm was used to assign scores to the 18,792 comments from

“Hubei Daily”, and the results are shown in Fig. 5 below. It is noticeable that a large number of comments with neutral emotional overtones appear, not unlike the results of the previous sections.

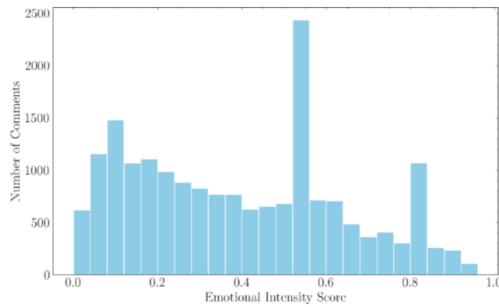


Fig. 5. Distribution of Sentiment Scores of Comments from Hubei Daily

Comparative Analysis

The analysis of comment engagement showed that the “Cover News” video content generated a higher volume and intensity of user comments compared to the “Hubei Daily” posts, indicating that the former’s coverage was more effective in capturing public attention and eliciting active discussion. The sentiment analysis further highlighted the differences in the distribution of positive, negative, and neutral sentiment expressed by users, with the “Cover News” comments exhibiting a higher proportion of negative sentiment (Table 2).

Table 2. Comparison of the percentage of the emotional color

| Emotional Tendency | Cover News | Hubei Daily |
|--------------------|------------|-------------|
| Strongly Negative | 40.00% | 28.90% |
| Negative | 23.50% | 22.50% |
| Neutral | 17.10% | 27.30% |
| Positive | 13.90% | 12.10% |
| Strongly Positive | 5.6% | 9.2% |

4.3 Thematic Analysis Results

To further investigate the differences in the user comments, the researchers conducted a thematic analysis focusing on the comments that exhibited negative sentiment tendencies. Using a keyword co-occurrence semantic network approach based on TF-IDF,

combined with theme clustering powered by ChatGPT 4.0, the researchers identified the following key themes:

Thematic Analysis of Cover News

Emotional and Human Impact: Dominated by keywords such as “tears”, “heartache”, “deceased”, and “family members”. This cluster emphasizes immediate emotional responses, personal losses, and the deep impact on the families and friends of the victims. It highlights discussions on the need for psychological support and community solidarity.

Educational and Professional Impact: Featuring terms like “college students”, “medical students”, “study medicine”, and “achievement”. This cluster focuses on the educational and career aspirations affected by the incident. It addresses the impact on the academic community, potential disruptions to educational paths, and the truncated dreams of young professionals.

Structural and Safety Concerns: With keywords such as “tofu-dreg project”, “dangerous buildings”, and “earthquake”. This cluster addresses concerns about building integrity. It highlights issues related to construction standards, material quality, regulatory compliance, and the enforcement of safety protocols.

Social Critique and Responsibility: Integrating keywords like “black heart”, “landlord”, “rent a house”, and “condemned.” This cluster explores societal reactions and responsibilities. It examines the roles of property owners, builders, and potential corrupt practices, focusing on accountability and moral obligations in housing and student accommodations.

Each cluster represents a distinct yet interconnected aspect of the overall discussion, forming a comprehensive picture of the incident’s multifaceted impact. This holistic approach aids in understanding the tragedy’s effects, supporting structured responses to prevent future occurrences, and aiding those affected (Fig. 6).

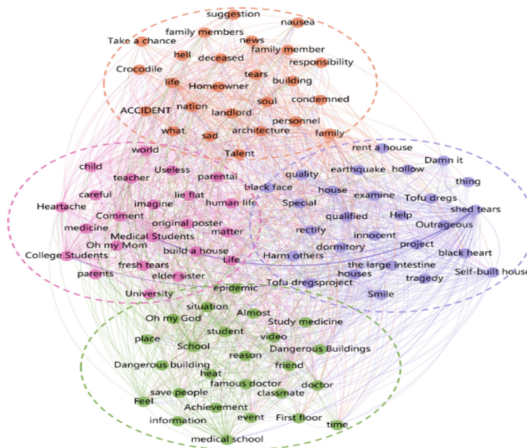


Fig. 6. Semantic Network Co-occurrence of Cover News Comments

The thematic analysis of the negatively-valenced comments provided additional insights into the contrasting ways in which the two media accounts' coverage was perceived and discussed by the public. The "Cover News" comments tended to emphasize themes related to building safety, government responsibility, and the need for accountability, while the "Hubei Daily" comments focused more on expressions of grief and discussions around the potential causes of the collapse.

5 Discussion

5.1 Time Series Characteristics

The comparative analysis of user-generated content revealed notable inconsistencies in the volume of comments across the traditional media and new media accounts. Contrary to expectations, the specialized new media account (Cover News) exhibited a significantly higher number of user comments compared to the traditional media account (Lakeland Daily News). This suggests that the new media outlet may have been more effective in fostering user engagement and interactivity on the shorts platform [21].

The disparity in comment volume highlights challenges in traditional media's digital transformation efforts. While traditional media organizations possess established brand recognition and journalistic expertise, they struggle to match the user engagement levels seen on newer digital platforms. This finding aligns with previous research indicating that the content preferences and engagement patterns of shorts platform users often diverge from traditional media's established strategies [22].

The stark contrast in comment volume between traditional and new media accounts underscores the need for traditional media to adapt to the unique dynamics of shorts platforms. Leveraging user-generated content, such as comments, could be crucial for the success of their transformation efforts in this evolving media landscape. Investigating the factors driving these engagement disparities can provide valuable insights for strategic decision-making [23].

Future research could explore the underlying factors contributing to these patterns, such as the editorial practices of media outlets, audience demographics, preferences, and the broader social and political context. Expanding the analysis to include a wider range of media sources and platforms could yield a more comprehensive understanding of the interplay between media reporting and online public sentiment [24].

5.2 Sentiment Characteristics

The sentiment analysis revealed further disparities between traditional and new media accounts. Contrary to expectations, the traditional media account (Hubei Daily) exhibited a more positive emotional tone in user comments compared to the new media account (Cover News). This suggests that traditional media might be more successful in fostering positive sentiment among its audience on shorts platforms.

However, a closer examination shows that despite the traditional media account's relatively positive sentiment, user comments across both accounts generally exhibited a negative tone. Typically, user comments on disaster-related events are highly negative,

focusing on blame and criticism. This trend was less pronounced on the traditional media account, likely because users are more cautious about commenting on official accounts [25].

This discrepancy highlights challenges in traditional media's digital transformation. While they can generate positive content, they struggle to resonate with the audience and shift overall sentiment positively [21]. The prevalence of negative sentiment suggests a disconnect between traditional media's efforts and user preferences on shorts platforms [26].

Understanding the factors driving sentiment patterns on shorts platforms is crucial. Analyzing audience emotional responses and the drivers of negative sentiment can refine content strategies and digital transformation efforts. Bridging the gap between traditional media's positive messaging and the audience's negative sentiment is vital for their successful transition to emerging platforms [27].

5.3 Thematic Characteristics

Topic modeling analysis revealed significant disparities in the breadth and diversity of user-generated discussions between traditional and new media accounts. Contrary to expectations, the new media account (Cover News) had a wider range of discussion topics, reflecting more diverse content. In contrast, discussions on the traditional media account (Hubei Daily) were more concentrated within narrower themes [5].

This suggests that while traditional media outlets have made efforts to create more appealing content as part of their digital transformation, they still face challenges in meeting the diverse content preferences of shorts platform users. The new media account's ability to capture and reflect a broader range of user interests has led to more extensive engagement [6].

The concentrated discussion topics on the traditional media account indicate limitations in its content strategies, constrained by conventional frameworks and agenda-setting practices. This limitation could hinder traditional media's ability to resonate with the content preferences and discussion habits of shorts platform users, affecting user engagement and loyalty [28].

6 Limitations and Future Work

While this study offers valuable insights into user engagement, sentiment, and thematic content differences across short video posts about the Changsha building collapse by "Cover News" and "Hubei Daily," several limitations should be acknowledged for future research.

First, the analysis is limited to user comments on a single social media platform, Douyin. These findings may not be generalizable to other platforms or forms of online discourse, as user behavior varies across digital environments. Additionally, the study focuses only on user comments, not on the content and framing of the media accounts' video posts. A deeper comparative analysis of the video content and journalistic practices could further clarify the factors behind the observed variations in public response. Lastly, the reliance on automated sentiment analysis and thematic clustering techniques may not fully capture the nuanced and contextual nature of human expression and opinion.

7 Conclusion

This study examined the differences in user engagement, sentiment, and thematic content across the short video posts about the Changsha building collapse event by the “Cover News” and “Hubei Daily” media accounts on the Douyin platform. The findings reveal notable disparities in the patterns of public response, suggesting that the two media outlets may have framed and reported on the event in divergent ways, leading to distinct perceptions and reactions among their respective audiences.

The transformation of traditional media has not been as successful as one might have hoped. While traditional media outlets have become more reflective and nuanced in their coverage, they have struggled to match the effectiveness of specialized new media accounts when it comes to user-generated content. New media platforms have empowered individuals to share their own perspectives and experiences, creating a more diverse and dynamic information landscape. In contrast, the shift in traditional media has been more incremental, with legacy outlets still grappling with the challenges of adapting to the digital age.

Despite the increased sophistication of traditional media, their content still tends to lack the immediacy, interactivity, and sense of community that characterizes successful new media initiatives. Audiences today expect to not just consume information, but to actively participate in its creation and dissemination. Ultimately, the transformation of media is an ongoing process, and the relative success of traditional and new media outlets will depend on their ability to adapt to the changing needs and expectations of their audiences. The future of media will likely be defined by a hybrid approach that leverages the strengths of both traditional and new media formats.

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